

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of )  
Christian BENZ et al. ) Group Art Unit: Unassigned  
Application No.: Unassigned ) Examiner: Unassigned  
Filed: August 29, 2001 )  
For: METHOD AND APPARATUS FOR )  
THE MANUFACTURE OF A )  
DIGITAL COLOR PICTURE )

**PRELIMINARY AMENDMENT**

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

*Kindly amend the above-identified application as follows.*

**IN THE SPECIFICATION:**

*Kindly replace the paragraph beginning at page 5, line 12, with the following:*

Color management and color management systems are generally known and are generally used in (other) digital color reproduction processes. A comprehensive and clear presentation of the background, technology and uses of color management systems is found in the publication "Postscriptum on Color Management, Philosophy and Technology of Color Management" by Stefan Brües, Liane May and Dietmar Fuchs, published in August, 1999, by the company Logo GmBH, a company of the Gretag MacBeth Group. A further article on color management is found, for example, in chapter 17 entitled "Device-Independent Color Imaging" of the book "Color Appearance Models" of Mark D.

Fairchild, first edition, published 1997 by Addison Wesley. These documents are hereby incorporated by reference in their entireties. A further discussion of the color transformation T used in the process in accordance with the invention is therefore not necessary for the person skilled in the art.

*Kindly insert this paragraph after the paragraph beginning on page 15, line 12:*

It will be appreciated by those skilled in the art that the present invention can be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The presently disclosed embodiments are therefore considered in all respects illustrative and not restricted. The scope of the invention is indicated by the appended claims rather than the foregoing description and all changes that come within the meaning and range and equivalence thereof are intended to be embraced within.

**IN THE CLAIMS:**

*Kindly replace claims 1-18 with the following:*

1. (Amended) Process for the manufacture of a digital color picture from an original, comprising the steps of:  
photoelectrically scanning the original by way of a color-enabled scanning device for obtaining scanning data;  
forming the digital color picture from the scanning data;

transforming the digital color picture by way of a color transformation for achieving a colorimetric correspondence between the digital color picture and a reference color test picture; and

at least one of storing the transformed digital color picture in a preselected format and recording the digital color picture on a data carrier medium.

2. (Amended) Process according to claim 1, wherein the step of transforming is carried out according to color management principles by using a specific profile which describes a combination of type-specific colorimetric properties of the original and a specific transfer function of the scanning device.

3. (Amended) Process according to claim 2, comprising the step of:  
providing a profile for each of a number of combinations of different original types and different scanning devices, wherein the step of transforming is carried out with a profile that belongs to an actually used scanning device and the actual original type used.

4. (Amended) Process according to claim 3, wherein the step of providing the profile comprises the steps of:

respectively assigning the different original types according to similarities in colorimetric properties to one of a number of original categories;

setting one original type for each original category as master original; and

providing a separate profile for each combination of master original and different scanning device, wherein the step of transforming is carried out with the profile that belongs to the actually used scanning device and to a master original which belongs to an original category to which the actual photographic original belongs.

5. (Amended) Process according to claim 4, wherein different assignments of original types to the original categories are formed for different quality requirements and used for a selection of a respective profile.

6. (Amended) Process according to claim 3, including the steps of:  
providing test originals of individual original types for an assignment of the different original types to original categories, the test originals carrying a test image having several color measurement fields measuring the color values of the color measurement fields, comparing the color measurement data of the test originals and assigning the original types based on the comparison of the color measurement values.

7. (Amended) Process according to claim 1, comprising the steps of:  
selecting one original type as a superior reference original type;  
making a physical analog color test card as reference color test image from an original of the reference original type, the test card including a color measurement card;  
and  
using this reference color test image for creating the profile.

8. (Amended) Process according to claim 2, comprising the steps of:

carrying out a quality control from time to time using the test originals by colorimetrically comparing digital test color pictures produced from the test originals with corresponding reference test color pictures;

determining a quality measurement from the color differences; and

newly creating profiles when the quality measurement exceeds a preselected threshold value.

9. (Amended) Process according to claim 2, comprising the steps of:

treating the original, which is an exposed photographic original material, by wet chemistry prior to the scanning; and

incorporating the wet chemistry treatment of the original material into a formation of the profile.

10. (Amended) Apparatus for the manufacture of a digital color picture, comprising:

a color-enabled scanning device for photoelectrically scanning an original to obtain scanning data; and

a computer for forming the digital color picture from the scanning data obtained in a preselected data format, the computer cooperating with the scanning device and at least one of storing the digital color picture and recording it on a data carrier medium, and the computer subjecting the digital color picture prior to the at least one of storage and

recording to a color transformation for transforming the color space defined by a combination of type specific calorimetric properties of the original and a specific transfer function of the scanning device used, so that a colorimetric correspondence between the digital color picture and a reference color test picture is achieved.

11. (Amended) Apparatus according to claim 10, wherein the computer carries out the color transformation according to color management principles by using a specific profile which describes the combination of the type specific colorimetric properties of the original and the specific transfer function of the scanning device used.

12. (Amended) Apparatus according to claim 11, wherein the computer comprises:  
means for respectively storing one profile for one of a number of combinations of different types of originals with different scanning devices; and

means for recognizing the actually used scanning device and the type of the actual original on the basis of information in relation thereto, wherein the computer is constructed for carrying out the transformation with a profile that belongs to an actually used scanning device and the actual original type.

13. (Amended) Apparatus according to claim 12, wherein the computer comprises:  
means for respectively assigning each of a number of different original types according to similarities of spectral properties to one of a number of original categories and for selecting one type of original category for each original as master original; and

means for storing a profile for each combination of master original and one of a number of different scanning devices, wherein the computer carries out the color transformation with the profile that actually belongs to the actually used scanning device and to a master original of an original category to which the actual photographic original belongs.

14. (Amended) Apparatus according to claim 11, wherein the computer comprises:  
a profile generation means for automatically creating a profile on the basis of image data of a digital test color picture and a reference color test picture.

15. (Amended) Apparatus according to claim 10, comprising:  
quality control means for controlling the quality of the digital color picture.

16. (Amended) Apparatus according to claim 15, wherein the quality control means forms a quality measure by comparing digital test color pictures with corresponding digital reference test color pictures and causes a new calculation of the profile when the quality measure exceeds a preselected threshold value.

17. (Amended) A color measurement strip comprising:  
a color test image region with a relatively small number of color measurement fields;

a color test card region with a relatively large number of color measurement fields;  
and

a visual test image region with at least one picture motif suitable for a visual color  
evaluation, wherein the color measurement strip is used in a process comprising the steps  
of:

photoelectrically scanning an original by way of a color-enabled scanning device for  
obtaining scanning data;

forming a digital color picture from the scanning data;

transforming the digital color picture by way of a color transformation for achieving  
a colorimetric correspondence between the digital color picture and a reference color test  
picture; and

at least one of storing the transformed digital color picture in a preselected format  
and recording the digital color picture on a data carrier medium.

18. (Amended) Color measurement strip according to claim 17, wherein the color  
test image region includes twelve color measurement fields in the additive and subtractive  
base colors, white, black, and four different shades of gray respectively.



**REMARKS**

The amendments were made to place the application in a more suitable form prior to examination. Favorable consideration is respectfully requested.

Respectfully submitted,

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Date: August 29, 2001

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Page 5, Paragraph Beginning at Line 12

Color management and color management systems are generally known and are generally used in (other) digital color reproduction processes. A comprehensive and clear presentation of the background, technology and uses of color management systems is found in the publication "Postscriptum on Color Management, Philosophy and Technology of Color Management" by Stefan Brües, Liane May and Dietmar Fuchs, published in August, 1999, by the company Logo GmbH, a company of the Gretag MacBeth Group. A further article on color management is found, for example, in chapter 17 entitled "Device-Independent Color Imaging" of the book "Color Appearance Models" of Mark D. Fairchild, first edition, published 1997 by Addison Wesley. These documents are hereby incorporated by reference in their entireties. A further discussion of the color transformation T used in the process in accordance with the invention is therefore not necessary for the person skilled in the art.

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Page 15, Insert After the Paragraph Beginning at Line 12

It will be appreciated by those skilled in the art that the present invention can be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The presently disclosed embodiments are therefore considered in all respects illustrative and not restricted. The scope of the invention is indicated by the appended claims rather than the foregoing description and all changes that come within the meaning and range and equivalence thereof are intended to be embraced within.

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**Marked-up Claims 1-18**

1. (Amended) Process for the manufacture of a digital color picture from an original, comprising the steps of:

photoelectrically scanning the original by way of a color-enabled scanning device for obtaining scanning data[.];

forming the digital color picture from the scanning data[.];

transforming the digital color picture by way of a color transformation for achieving a colorimetric correspondence between the digital color picture and a reference color test picture[.]; and

[one of] ~~at least one of~~ storing the transformed digital color picture in a preselected format and recording the digital color picture on a data carrier medium.

2. (Amended) Process according to claim 1, wherein the [steps of transforming are] ~~step of transforming is~~ carried out according to color management principles by using a specific profile which describes [the] a combination of [the] type-specific colorimetric properties of the original and [the] a specific transfer function of the scanning device.

3. (Amended) Process according to claim 2, comprising the [further] step of:  
providing a profile for each of a number of combinations of different original types and different scanning devices, [and] wherein the step of transforming is carried out with

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**Marked-up Claims 1-18**

[that profile which] a profile that belongs to [the] an actually used scanning device and the actual original type used.

4. (Amended) Process according to claim 3, wherein the step of providing the profile [includes] comprises the steps of:

respectively assigning the different original types according to similarities in colorimetric properties to one of a number of original categories[.];

setting one original type for each original category as master original[.]; and

providing a separate profile for each combination of master original and different scanning device, [and] wherein the step of transforming is carried out with [that profile which] the profile that belongs to the actually used scanning device and to [that] a master original which belongs to [the] an original category to which the actual photographic original belongs.

5. (Amended) Process according to claim 4, wherein different assignments of original types to the original categories are formed for different quality requirements and used for [the] a selection of [the] a respective profile.

6. (Amended) Process according to claim 3, including the [further] steps of:  
providing test originals of [the] individual original types for [the] an assignment of the different original types to [the] original categories, the test originals carrying a test

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**Marked-up Claims 1-18**

image having several color measurement fields measuring the color values of the color measurement fields, comparing the color measurement data of the test originals and assigning the original types based on the comparison of the color measurement values.

7. (Amended) Process according to claim 1, comprising the [further] steps of:

selecting one original type as a superior reference original type[.];

making a physical analog color test card as reference color test image from an original of the reference original type, the test card including a color measurement card[.];  
and

using this reference color test image for creating the profile.

8. (Amended) Process according to claim 2, [including] comprising the [further] steps of:

carrying out a quality control from time to time using the test originals[,] by colorimetrically comparing digital test color pictures produced from the test originals with corresponding reference test color pictures[.];

determining a quality measurement from the color differences[.]; and

newly creating [the] profiles when the quality measurement exceeds a preselected threshold value.

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**Marked-up Claims 1-18**

9. (Amended) Process according to claim 2, [including] comprising the steps of:  
treating the original, which is an exposed photographic original material, by wet  
chemistry prior to the scanning[.]; and

incorporating the wet chemistry treatment of the original material into [the] a  
formation of the profile.

10. (Amended) Apparatus for the manufacture of a digital color picture,  
comprising:

a color-enabled scanning device for photoelectrically scanning [the] an original to  
obtain scanning data; and

a computer for forming the digital color picture from the scanning data obtained in a  
preselected data format, the computer cooperating with the scanning device and at least one  
of storing the digital color picture and recording it on a data carrier medium, and the  
computer subjecting the digital color picture prior to the at least one of storage [or] and  
recording to a color transformation for transforming the color space defined by [the] a  
combination of [the] type specific calorimetric properties of the original and [the] a specific  
transfer function of the scanning device used, so that a colorimetric correspondence  
between the digital color picture and a reference color test picture is achieved.

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**Marked-up Claims 1-18**

11. (Amended) Apparatus according to claim 10, wherein the computer [is constructed for carrying out] carries out the color transformation according to color management principles by using a specific profile which describes the combination of the type specific colorimetric properties of the original and the specific transfer function of the scanning device used.

12. (Amended) Apparatus according to claim 11, wherein the computer comprises;  
means for respectively storing one profile for one of a number of combinations of different types of originals with different scanning devices[.]; and

means for recognizing the actually used scanning device and the type of the actual original on the basis of information in relation thereto, [whereby] wherein the computer is constructed for carrying out the transformation with [that profile which] a profile that belongs to [the] an actually used scanning device and the actual original type.

13. (Amended) Apparatus according to claim 12, wherein the computer [further] comprises;

means for respectively assigning each of a number of different original types according to similarities of [the] spectral properties to one of a number of original categories and for selecting one type of original category for each original as master original; and

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**Marked-up Claims 1-18**

means for storing a profile for each combination of master original and one of a number of different scanning devices, [and whereby] wherein the computer [is constructed for carrying out] carries out the color transformation with [that profile which] the profile that actually belongs to the actually used scanning device and to [the] a master original of [that] an original category to which the actual photographic original belongs.

14. (Amended) Apparatus according to claim 11, wherein the computer [includes] comprises:

a profile generation means for automatically creating a profile on the basis of image data of a digital test color picture and a reference color test picture.

15. (Amended) Apparatus according to claim 10, [further] comprising:

quality control means for controlling the quality of the digital color picture.

16. (Amended) Apparatus according to claim 15, wherein the quality control means [forming] forms a quality measure by comparing digital test color pictures with corresponding digital reference test color pictures and [causing] causes a new calculation of the profile when the quality measure exceeds a preselected threshold value.

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**Marked-up Claims 1-18**

17. (Amended) A color measurement strip [for carrying out a process according to one of claims 1-9,] comprising:

a color test image region with a relatively small number of color measurement fields[.];

a color test card region with a relatively large number of color measurement fields;  
and

a visual test image region with at least one picture motif suitable for a visual color evaluation, wherein the color measurement strip is used in a process comprising the steps of:

photoelectrically scanning an original by way of a color-enabled scanning device for obtaining scanning data;

forming a digital color picture from the scanning data;

transforming the digital color picture by way of a color transformation for achieving a colorimetric correspondence between the digital color picture and a reference color test picture; and

at least one of storing the transformed digital color picture in a preselected format and recording the digital color picture on a data carrier medium.

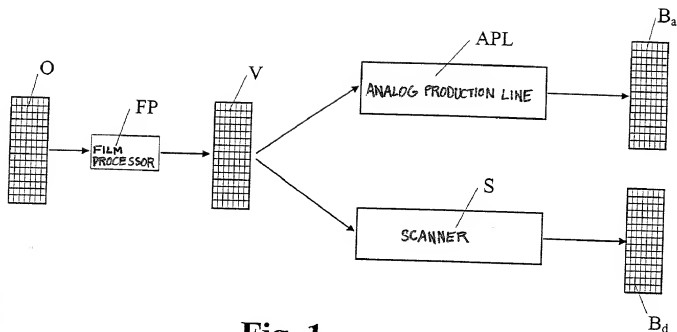
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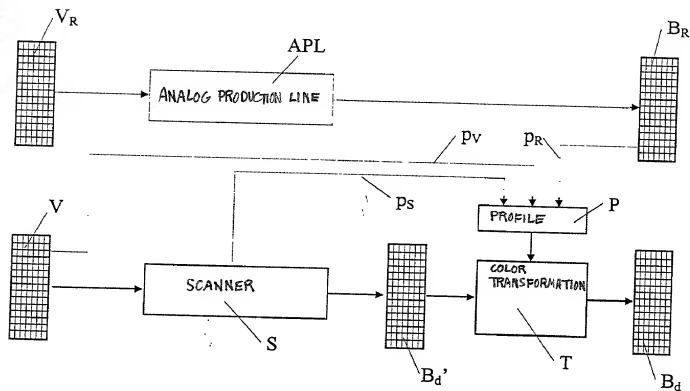
**Marked-up Claims 1-18**

18. (Amended) Color measurement strip according to claim 17, wherein the color test image region includes [12] twelve color measurement fields in the additive and subtractive base colors, white, black, and four different shades of gray respectively.

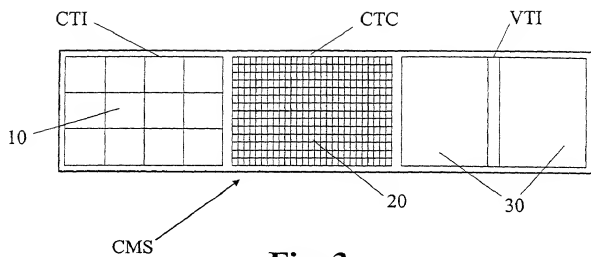
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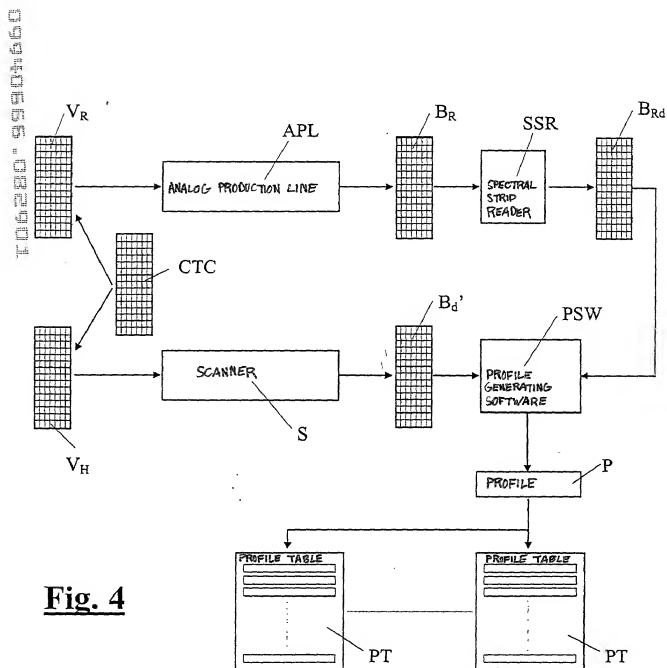
**Fig. 1**

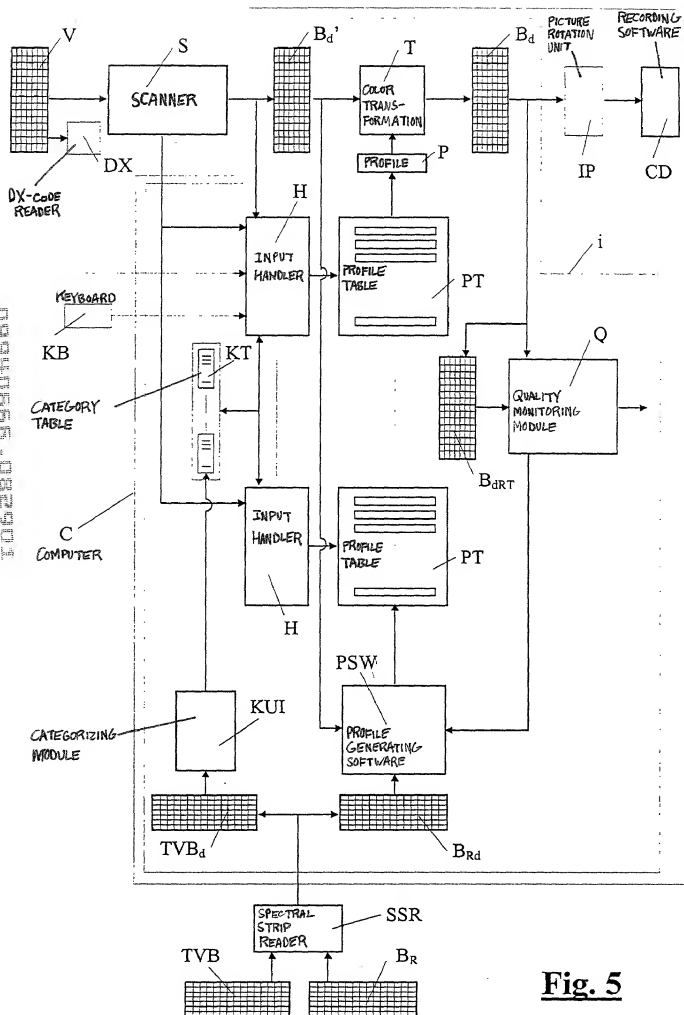


**Fig. 2**



**Fig. 3**





**Fig. 5**